



Selection of a lectotype for *Brachycrus laticeps mooki* Schultz and Falkenbach (Mammalia, Artiodactyla, Merycoidodontidae)

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In 1968 Schultz and Falkenbach described a new oreodont subspecies, *Brachycrus laticeps mooki*, from a locality 11 km (7 miles) southeast of Fort Logan, Meagher County, Montana. As a holotype for this new taxon, Schultz and Falkenbach (1968:369) designated both American Museum of Natural History (AMNH) specimen number 21321 (a skull) and AMNH 21322 (a left ramus). Although the citation of two separate catalog numbers as a holotype is highly unusual, Schultz and Falkenbach believed that the specimens cataloged under both numbers represent only a single individual. The use of the term ‘holotype’ was appropriate, therefore, although it would have been more common practice to place elements believed to represent a single individual under a single catalog number. Schultz and Falkenbach did not give a justification for their opinion that AMNH 21321 and AMNH 21322 represent the same individual, although they stated this belief in two publications (1941 and 1968).

The suggestion that the skull and ramus represent a single individual is tenuous at best. There is no indication in the field record that the specimens were found in association and the two are listed under completely different field numbers (C. C. Mook Field Record, 1925, AMNH Vertebrate Paleontology Archives, VPA 38, 6:2 Field Diaries Box 5, Envelope 7). AMNH 21321 was collected under Field Number 31 along with a skull, mandible, and atlas identified as *Aepycamelus* sp. (AMNH 21337) and a second specimen of *Brachycrus* (left maxilla, see below). AMNH 21322 (the ramus) is listed under Field Number 9A. Since Mook’s field numbers were assigned as specimens were collected over several days, widely different numbers would tend to suggest that the specimens were not found near to each other. The Field Record is a little difficult to decipher, but it would appear that Field Numbers 1 through 14 were all located and/or collected on August 22 or 23, 1925. Field Numbers 16 through 32, however, all appear to have been located and/or collected August 24 or 25, 1925. Thus, it is likely that the skull and ramus were discovered on different days.

The only factors suggesting that a single individual may be represented by the skull and ramus is that the skull and ramus represent individuals of approximately the same size and the teeth in the ramus and those in the right maxilla are in the same stage of wear (they are both severely worn). In my opinion, these factors are not sufficient to establish that a single individual is represented by the skull and ramus. Given that the skull and ramus were listed under widely different field numbers, that there is no evidence that they were found in association (or even in close proximity to each other), and that one of the field numbers includes at least three different individuals representing two genera, it seems likely that the skull and ramus probably do not belong to the same *Brachycrus* specimen. *Brachycrus laticeps mooki* is based on syntypes, therefore, and a lectotype should be chosen for the subspecies.

The selection of a lectotype is complicated by the fact that AMNH 21321 represents at least two individuals, both referable to *Brachycrus*. Although this fact was not stated by Schultz and Falkenbach, the inclusion of two *Brachycrus* specimens under this number is clearly stated on the American Museum catalog card (the phrase “two individuals” is double underlined following the list of materials). According to the card, AMNH 21321 consists of a right maxilla with grinding teeth, atlas, axis, third or fourth cervical vertebra, braincase, and left maxilla. There is no indication on the card as to which elements belong to which individual.

At some point in the past, the cranial elements listed above (right maxilla, left maxilla, and braincase) had all been plastered together to create a reconstructed skull. Although this would seem to imply that all of the cranial elements represent a single animal, the right and left maxillae are almost certainly from different individuals. The cheek teeth in the right maxilla are all heavily worn so that the occlusal surfaces are completely flat (thus matching the state of wear exhibited by the left ramus originally included in the holotype), while the teeth in the left maxilla exhibit much less wear. Furthermore, there are no direct points of contact between the left maxilla and the other parts of the skull (confirmed by the permanent removal of all of the plaster holding the pieces together and examination by two American Museum preparators).

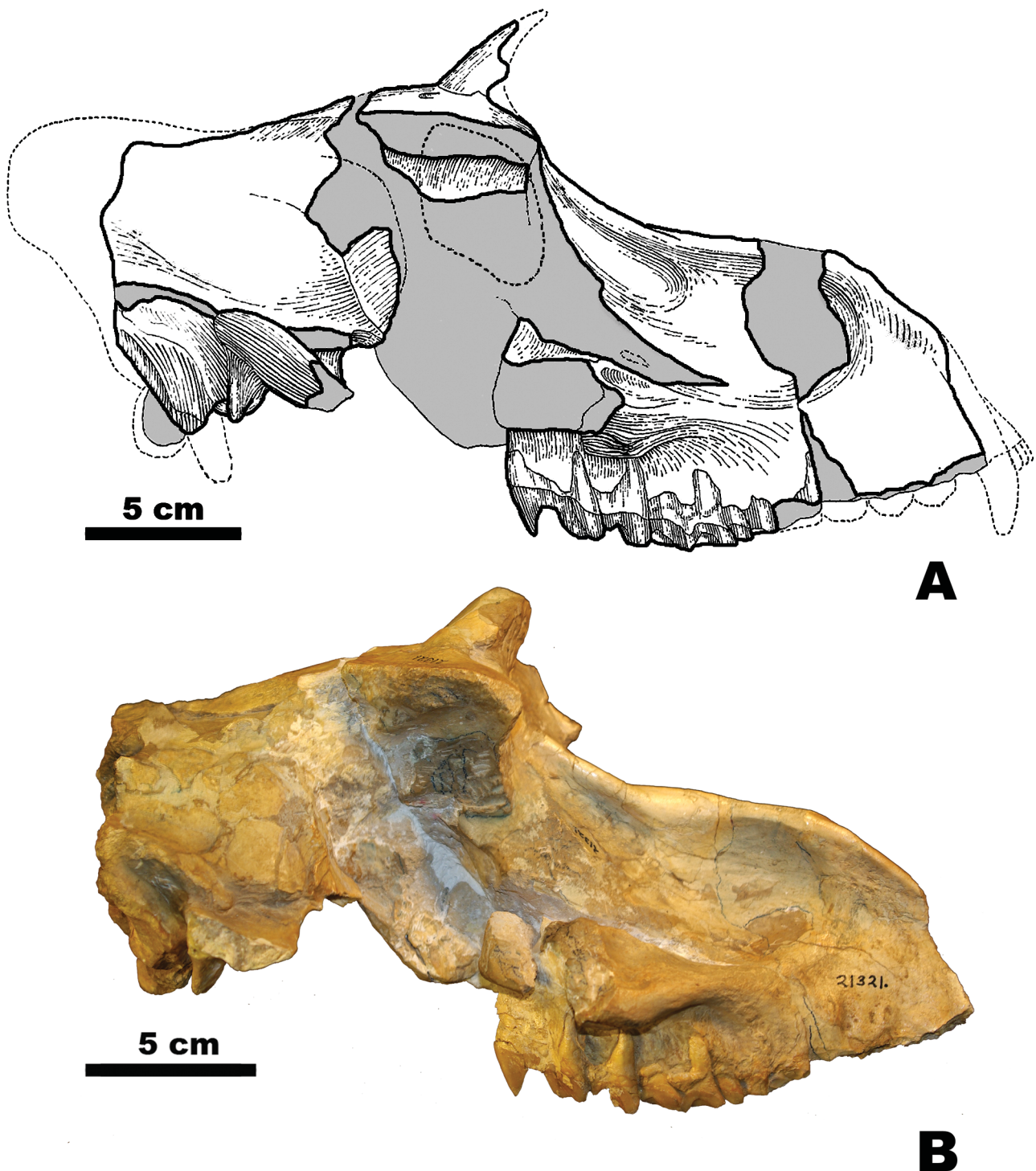


FIGURE 1. AMNH 21321, lectotype skull of *Brachycrus laticeps mooki*, lateral view. **A**, illustration based on Schultz and Falkenbach's published drawing showing missing parts and areas reconstructed in plaster, **B**, photograph of specimen as it currently appears, much of the plaster in the orbital and pterygoid regions having been removed. Dotted lines in illustration indicate missing structures; areas shaded in gray were reconstructed in plaster. Line illustration was modified from Schultz and Falkenbach, 1968, Figure 46. Used with permission of the Department of Library Services, American Museum of Natural History.

The right maxilla has at least two direct contacts with the braincase, however, and it is clear that both pieces represent a single individual. Although these contacts were originally obscured by the plaster reconstruction, removal of much of the plaster in the orbital and pterygoid region demonstrated that the contacts are present. The vertebrae cataloged under AMNH 21321 do not directly articulate with the skull (which is broken posteriorly) and it is uncertain as to which individual they represent (if either).



FIGURE 2. AMNH 21322, paralectotype jaw of *Brachycrus laticeps mooki*, lateral view.

TABLE 1. Summary of specimens discussed in this paper

Catalog Number	Field Number	Taxon	Material	Note
AMNH 21321	31	<i>Brachycrus laticeps mooki</i>	right maxilla and brain case	Lectotype. See Figure 1.
AMNH 21321	31	<i>Brachycrus laticeps mooki</i>	cervical vertebrae	Possibly part of the lectotype, otherwise a referred specimen.
AMNH 21321	31	<i>Brachycrus laticeps mooki</i>	left maxilla	Paralectotype or referred specimen.
AMNH 21337	31	<i>Aepycamelus</i> sp.	skull, jaws, and atlas	Separate taxon found with lectotype of <i>Brachycrus laticeps mooki</i> .
AMNH 21322	9A	<i>Brachycrus laticeps mooki</i>	left mandible	Paralectotype. See Figure 2.

As the first author to address the problem, I select the right maxilla and back part of the skull cataloged as AMNH 21321 as the lectotype for *Brachycrus laticeps mooki* (see Figure 1). This specimen was illustrated by Schultz and Falkenbach (1968, Figure 46), although it should be noted that the illustration as it appears in that publication shows a mirror image of the actual specimen.

The lectotype would also include any of the vertebrae cataloged under AMNH 21321 that represent this same individual, but it is possible that they belong to another animal. If none of the vertebrae belong to the type individual, then they cannot be considered part of the lectotype nor should they be regarded as paralectotypes since Schultz and Falkenbach did not include these vertebrae in their original description of the type material.

The left maxilla fragment also cataloged under AMNH 21321, almost certainly represents a different individual and is excluded from the lectotype. It is unclear whether Schultz and Falkenbach considered this left maxilla to be part of their type. They did not mention it specifically, but it is possible that they considered it to be part of the type ‘skull’ appearing in their short description. The fact that the left maxilla was attached by plaster to the lectotype’s right maxilla may suggest that the left maxilla was indeed part of Schultz and Falkenbach’s original type material. If that is the case,

then the left maxilla is a paralectotype for *Brachycrus laticeps mooki*. If the left maxilla was not part of the original type, then it should be regarded only as a referred specimen. At present, there is not enough information to definitively resolve this issue.

The ramus cataloged under AMNH 21322, and included in the holotype by Schultz and Falkenbach (see Figure 2), also appears to represent another individual and is relegated to the status of paralectotype.

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References

- Schultz, C.B. & Falkenbach, C.H. (1941) Ticholeptinae, a new subfamily of oreodonts. *Bulletin of the American Museum of Natural History*, 79 (1), 1–105.
- Schultz, C.B. & Falkenbach, C.H. (1968) The phylogeny of the oreodonts. Parts 1 & 2. *Bulletin of the American Museum of Natural History*, 139, 1–498.